NATIONAL AERONAUTICS and SPACE ADMINISTRATION
Goddard Space Flight Center
Wallop Flight Facility
Main Base
Mill Dam Road
Wallops Island, Virginia 23337

DATE OF INSPECTION: February 27 to 28, 2007

DRAFT: APRIL 10, 2007

FINAL DRAFT: APR 16 2007

RCRA Compliance Evaluation Inspection

NATIONAL AERONAUTICS and SPACE ADMINISTRATION
Goddard Space Flight Center
Wallop Flight Facility
Main Base
Mill Dam Road
Wallops Island, Virginia 23337

Mailing Address:
NASA Goddard space Flight Center
Wallops Flight Facility
Bldg F160 Code 250W
Wallops Island, VA 23337

Telephone Number: 757-824-1718

Date of Inspection: February 27 to 28, 2007

RCRA Identification Number: VA8 800 010 763

Web Address: www.nasa.gov

SIC Code: 9661

Latitude: 37.8644
Longitude: 75.5073

EPA Representative:	George H. Houghton Environmental Protection Specialist
State Representative:	Lisa Silva VADEQ Inspector

Facility Representative:	Joel Mitchell (ex: 1127) Acting Environmental Team Leader Environmental Office
	John Campbell Director – NASA Wallops
	Bonnie Crawford (ex: 2234) Environmental Protection Specialist
	Marianne Simko (EX: 2127) EG&G - Contractor
	Gordon Chancey NOAA – Environment & Safety
	Gregory Frostom NOAA - facilities

BACKGROUND

At the request of the Waste and Chemical Management Division, EPA Region III, the Fort Meade office of OECEJ inspected NASA Wallops Island – Main Base for compliance with the RCRA regulations. The facility was not notified prior to the inspection. The state agency, VADEQ, was notified at least two weeks prior to the inspection and were present during the inspection.

FACILITY DESCRIPTION

Wallops Space Flight Center actually consists of two sections, the Main Base (VA8 800 010 763) and the Main/Island (VA7 800 020 888). Each has its own separate RCRA identification number. The Main/Island facility will be addressed in a separate report. The Main Base, at one time a Navy Base, has about 1300 employee including 255 from NASA. In general, building designation A thru N denotes the Main Base while the remaining are the Island buildings. The property consists of somewhat less than 2000 acres. Included with the operations, is a research runway with two airplane hangers and support buildings. A range control center which monitors and control launches from the Island. Meteorological balloons are launched from the Facility. A NOAA facility, receives weather data from geosynchronous and polar orbiting weather satellites as well as other scientific satellite and ground station via satellites. In addition, there are facilities to support the NASA's mission and/or to maintain the buildings and grounds, including but not limited to, aircraft restoration, a machine shop, carpentry shop, paint shop, welding shop and a fire station. Military housing is also provided. A number of bunkers are used to store rocket motors. Another building houses rocket motors that are being examined or retrofitted to be used to launch payloads from the Island.

PERMIT STATUS

NASA Wallops Main Base is a large quantity generator of hazardous waste, storing for less than 90 days. At this point, there are no plans to apply for a permit to store for greater than 90 days or the treatment of hazardous waste.

INSPECTION OBSERVATIONS

The EPA inspector presented his credentials to the NASA representatives and provided them an overview of the inspection procedures and goals. This was followed by a discussion concerning NASA's mission at this location including waste generation and management activities. Upon completion of the briefing, the inspectors proceeded to select waste generation

locations to observe firsthand. Provided to the inspector, was a listing of the satellite accumulation locations (attached) that included the type of waste and point of contacts. From this list, a number of locations were chosen for inspection.

NASA has a contract with EG&G to manage their day to day activities for hazardous waste management. The generator calls the environmental team for pickup and transport of the waste to the B29, the <90 day storage building. The waste includes hazardous, non-hazardous and universal waste. The type and amount of waste are recorded on an internal form called the Hazardous Waste Disposal Inventory. A sample copy is attached. The individual generators do not transport the waste. This inventory is use to determine the amount of waste stored and helps in the preparation of the manifest by the facility disposal contractor. A NASA representative does sign the hazardous waste manifest.

NASA has an in-house training program to provide the generators with guidance on management of waste generated. Annual refreshers are provided. It is the worker's supervisor that is responsible to ensure the training is current. The environmental team, through EG&G, also ensures training is current and new employees are trained. The contractor also provides hazardous waste training for NASA, other government employees and NASA contractors.

Management of the satellite accumulation points, for the most part, were consistent with the rules. According to the list provided to this inspector, NASA has about 15 buildings that could potentially generate waste including hazardous waste and other waste. The inspectors observed over 20 separate containers in about 7 buildings through out thefacility. Each was typically 1 to 5 gallon in capacity with a few 55 gallon drums. The containers were closed and labeled with a hazardous waste label and contents. No leaks were observed. A sign near accumulation point stated that the location was a satellite accumulation point. At the satellite accumulation points, it was not uncommon to observe containers of non RCRA regulated waste. Secondary containment was provided for most containers. A number of photographs were taken to show management of the accumulation points and they are attached to the report.

The following are specific observations at individual accumulation points. Wet chemistry at the photo lab (building E2) was discontinued in 2006. The facility is now using digital technology for this process. The D011 waste is no longer generated at that location. In building F10, a red can is used to accumulate waste acetone contaminated rags. Although not a problem during the observation, since the container was empty, the lid did not fit properly (photo 30) and the unit should be replaced. The facility did remove the can from service.

The electrical shop (F16) has a bulb crusher used to manage universal waste fluorescent light tubes (photos 31 & 32). Dextrite is the manufacturer of the crusher with a model number

of UlC55DA-E. Apparently, VADEQ permits the satellite management of waste tubes in this manner. A copy of the rule is attached, VADEQ Rule: 9 VAC20-60-1505 C 3. It states that bulbs may be crushed with certain provisions. According to the VADEQ inspector this particular bulb crusher meets those requirements. The EPA inspector did note a date of 11-29-06 on the filter pack for crusher unit, and instructions mounted above the unit. According to the Electrical Shop representative, the filter-pack is replaced after 2 full drums of tubes, more or less. Therefore, the date on the filter pack is older than the contents in the drum. The drum was observed to be about 2/3 full at the time of this inspection. In the same area, a container holding universal waste batteries was observed. It was closed and dated 2/8/**2006**. Apparently, the date was not updated or incorrectly written on the container when the batteries were removed. The facility has a hazardous Waste Disposal Inventory form (attached) that shows the batteries were removed on 2/8/2007.

The NOAA facility was observed to have both universal and hazardous waste. One storage box held a 55 gallon drum that contained mineral spirits. A second container enclosure held an aerosol can puncturing device. The location is managed under the universal waste rules. The total quantity was less than 55 gallons. The facility should be cautioned that no more than 55 gallons can be stored at any single satellite storage location. Each of the containers were labeled as Hazardous Waste and closed. In another area, universal waste was stored. The inspector observed some lead acid batteries and NICD batteries in a tub with two containers of muratic acid (photos 46 & 47). The acid is useable. It is probably not a good idea to keep these two types of acid and other batteries with in the same secondary containment. In another area, the inspector noted a wooden box (photo 48) that contained fluorescent light tubes. It was labeled as a universal waste but not dated. The facility provided documentation for the last date the box was emptied (attached). According to the operator, the container did have another label but it is now missing.

The less than 90 day hazardous waste storage is located in building B29. This building was specifically constructed for hazardous waste storage. At the time of this inspection, the amount of waste in storage was limited, since the facility had a waste pick-up on January 23, 2007. The outside of the building had the appropriate signage and the entrances were secured. Inside, the floor was coated with an impervious material. No deterioration was observed. The lighting is explosion proof with a built in fire suppressant system and fire extinguishers. The building office has a telephone. A trench drain surrounds the floor. It has no observable outlets and no liquids were observed. The building also has a ventilation system and some temperature control. There are 7 bays to segregate waste. From this observation, 4 were used for hazardous waste and non-RCRA regulated waste. Within each bay, a blind sump was observed to provide additional spill containment. See attached floor plan and photographs of the storage building. All the containers of hazardous waste observed in storage were labeled with a Hazardous Waste

label and dated. None of the dates were greater than 90 days. The oldest date was 1-25-2007. Contents of the container were also written on the container. All containers were closed and no leaks or deterioration were observed. The date on one label was illegible but that was corrected immediately. In addition to the hazardous waste, universal waste was observed as well as non-RCRA regulated waste. The facility also appeared to have an adequate amount of spill control material, spare drums and over–packs.

Inspection reports for B29 were observed from the present back to December 2005 and found to be adequate. Sample copies are attached to this report.

Manifests were observed for 2007 and 2006 and found to be adequate for the information provided. LDR forms were completed and included with the manifest file. During the review, the inspector observed the facility shipped waste on 4-25-2006 but did not ship waste again until 8-1-2006 a time span of 97 days. According to their <90 day inspection records, the oldest drum date was 5-2-2006. That date remained the same on the inspection records until 8-1-2006 when the records stated 'no waste'. This time span was 90 days, not including the ship date. Selected <90 day inspection records are attached, showing the critical dates. The manifests in question were observed but not copied. The most recent manifest shows transportation for disposal date of 1-23-2007 (attached).

ATTACHMENTS

1. Photographs
2. Checklists
3. Wallops Island Fact sheet
4. Facility Description from the ICP
5. Satellite Accumulation Areas
6. Hazardous Waste Disposal Inventory
7. Fluorescent Bulb Crushing Operation
8. NOAA light tube date verification and Electric Shop UW battery documentation.
9. B29 <90 day storage building floor plan
10. B29 selected inspection records (including proof of 90 day storage)
11. Manifest dated 1-23-2007 and selected inspection records
12. VADEQ 2006 inspection (upon request)

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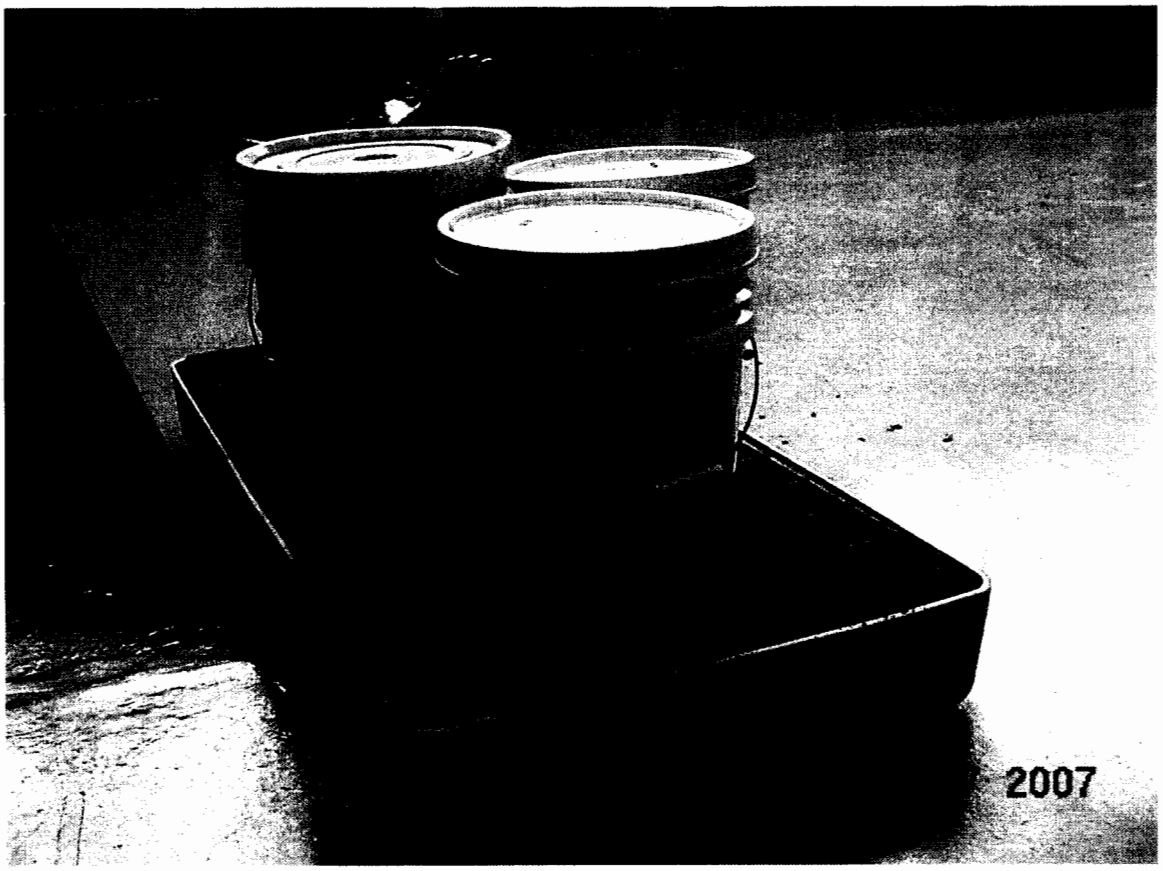
RCRA Id # VA8 800 010 763



Bldg. D1: this is an example of a satellite area with secondary containment. The containers held waste alodine and water. Each container was closed and labeled.

29
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Bldg. D1: another portion of the hanger showing waste JP5, this location is also a satellite accumulation point. The containers were labeled and closed.

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Building F10: this covered container is used to accumulate acetone contaminate rags. It was empty during this observation. As can be seen the lid does not fit properly, the facility representative removed it for replacement.

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Bldg f16: this is the photo of the bulb crusher located in the Electric Shop. It is managed as universal waste.

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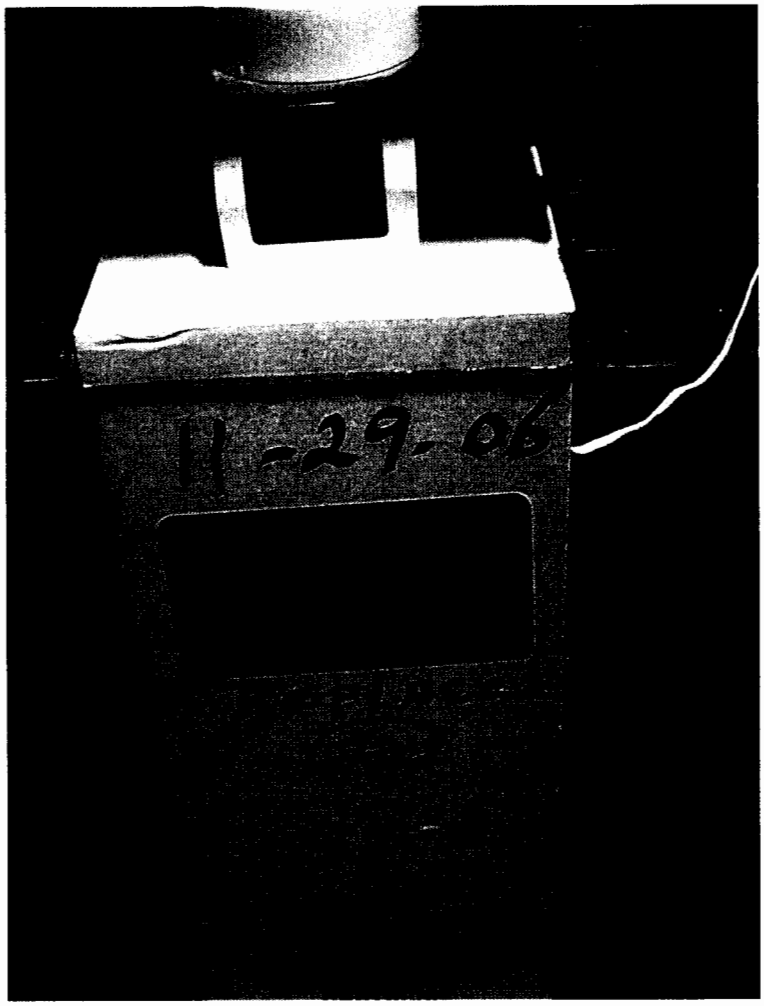

Bldg F16: this photo shows the filter on the bulb crusher. The date is when the filter was replaced. According to the facility representative, the filter is replaced after one or two drum changes.

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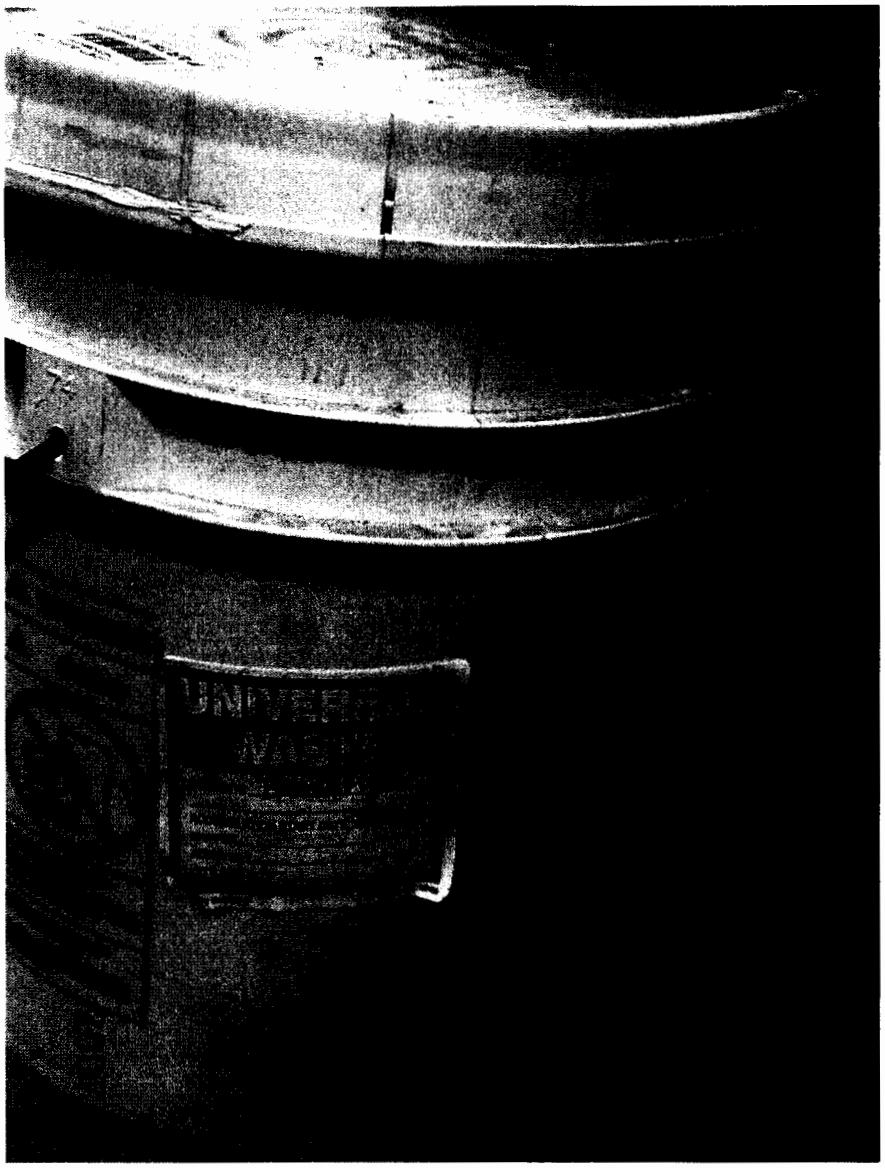

Bldg F16: this container of batteries was dated 2/8/2006 which is past the one year date for the storage of universal waste.

34
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These containers were located in the Paint Shop. The 55 gallon container was full and dated 2/27/2007. The smaller container is for rags and it was empty. According to the facility, Environmental was called earlier this day for a waste pick-up.

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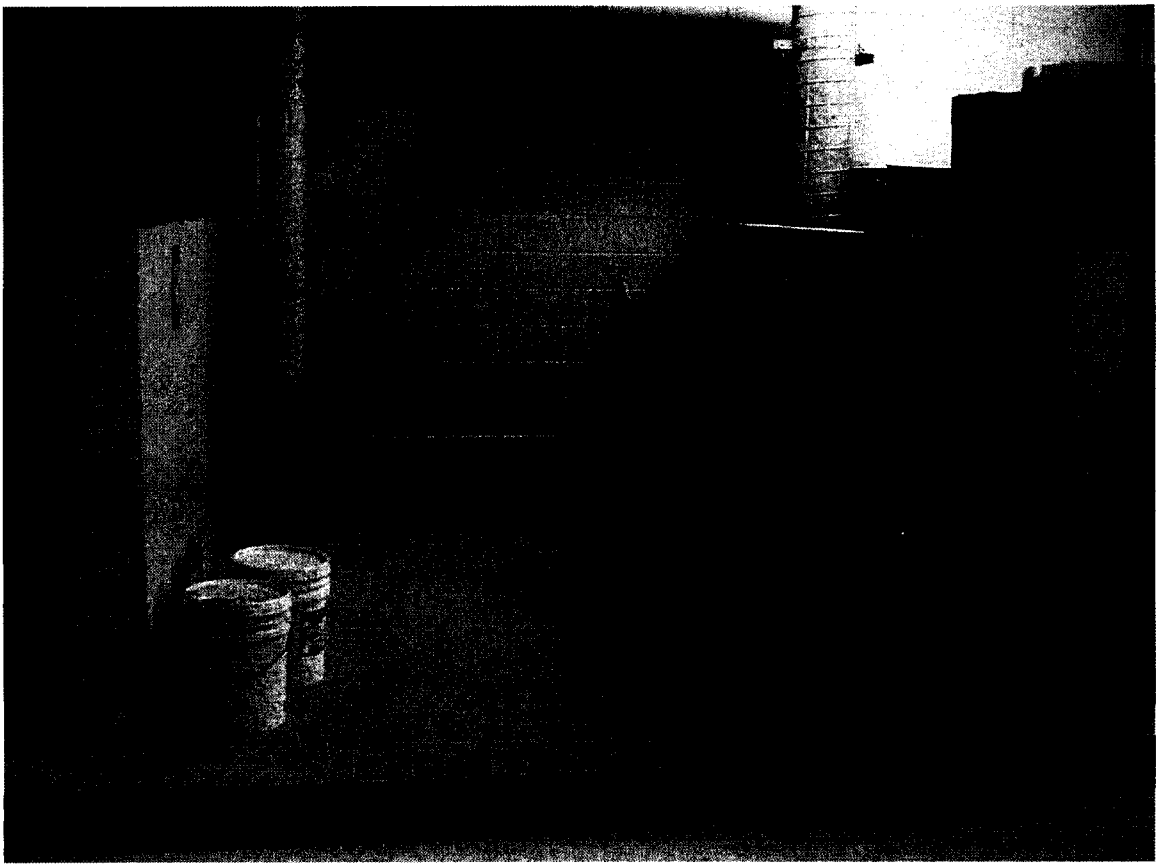

Bldg B29: the <90 day storage area, this bay held universal waste. Note the trench drain in front and the additional sump at the rear of the bay. This is a typical configuration for the remaining bays.

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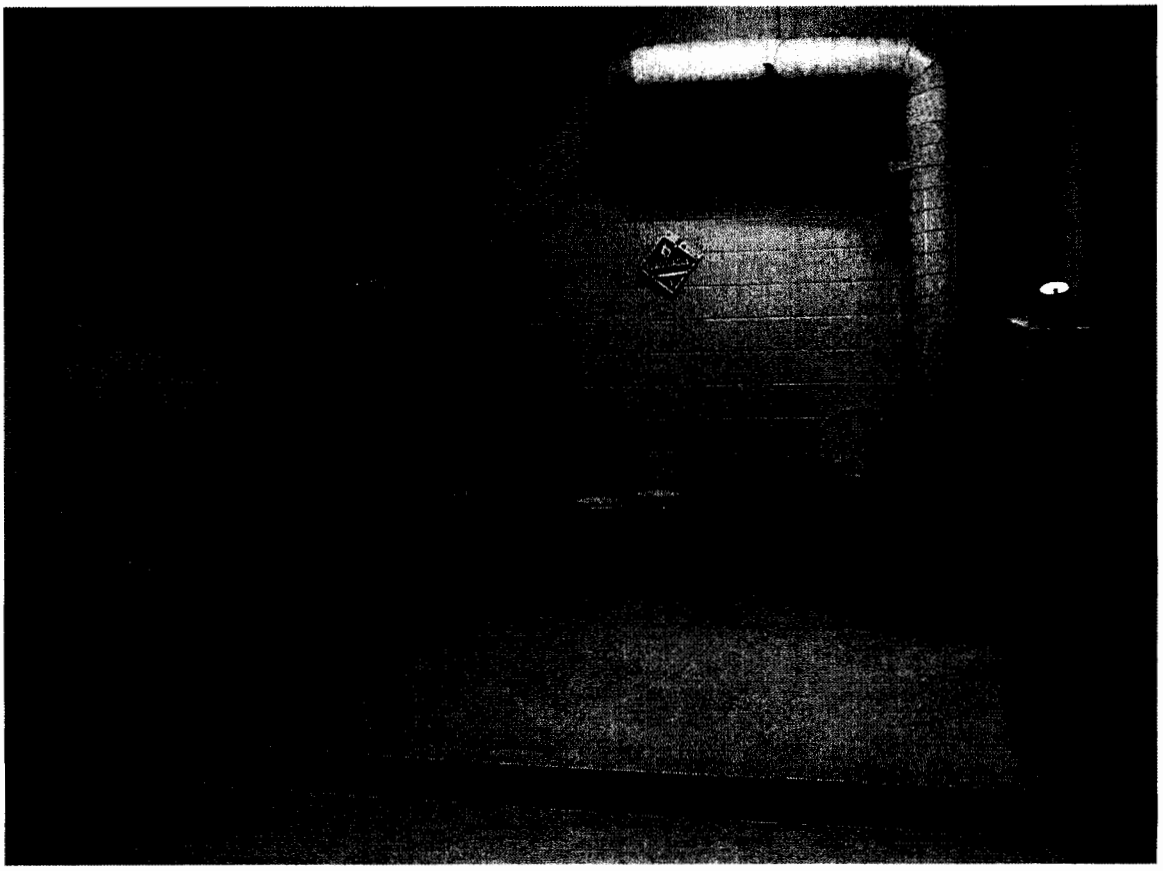

Bldg B29: <90 day storage, this bay held flammable waste. The containers observed were labeled, dated and closed.

37
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Wallop Flight Facility
Main Base
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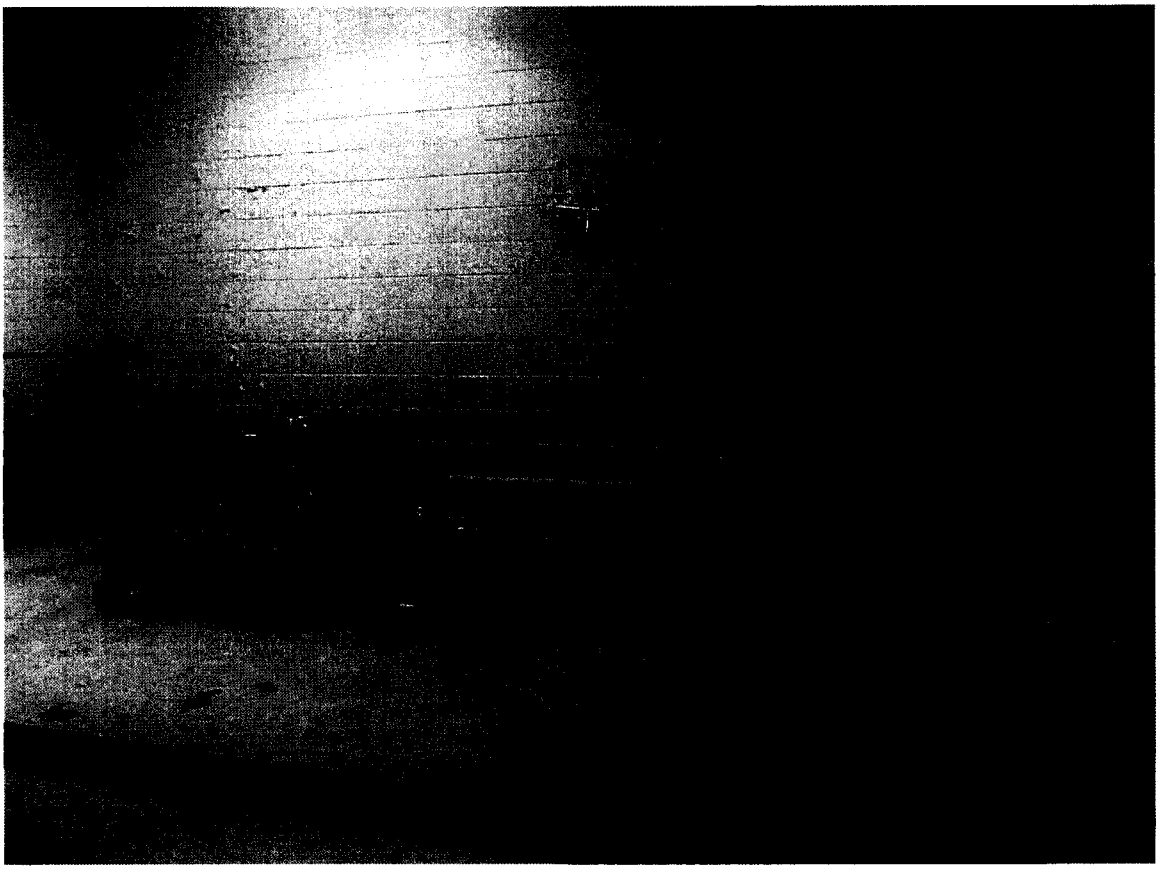
RCRA Id # VA8 800 010 763



Bldg. B29: <90 day storage, this bay held universal waste batteries. No items of concern were observed in this area.

38
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Wallop Flight Facility
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Mill Dam Road
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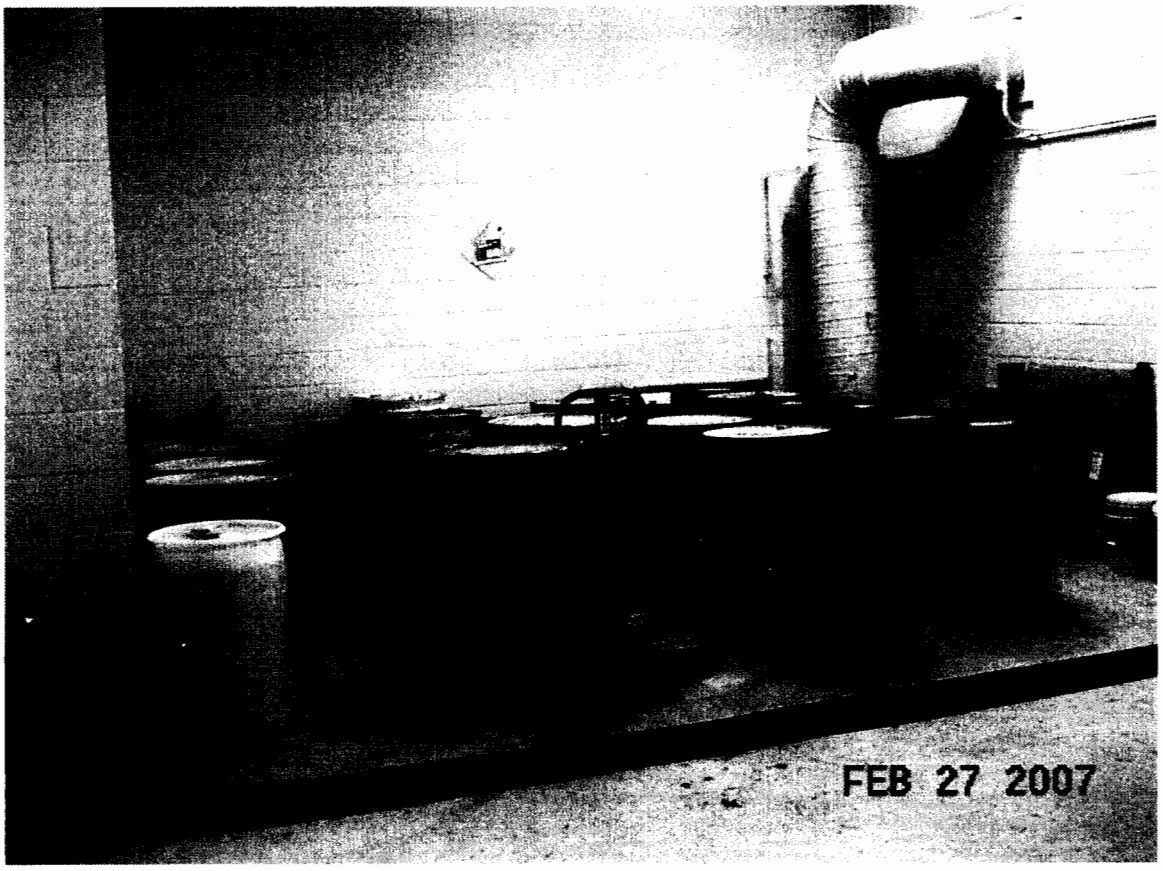
RCRA Id # VA8 800 010 763



Bldg. B29: <90 day storage, this bay held non RCRA regulated waste based on the labels on the drums.

39
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Main Base
Mill Dam Road
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G. Houghton
RCRA Id # VA8 800 010 763

Bldg. B29: <90 day storage, this is a view of the center aisle of the storage building. Most of the waste is stored on the right. Note the trench drain.

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Wallops Island, Virginia 23337
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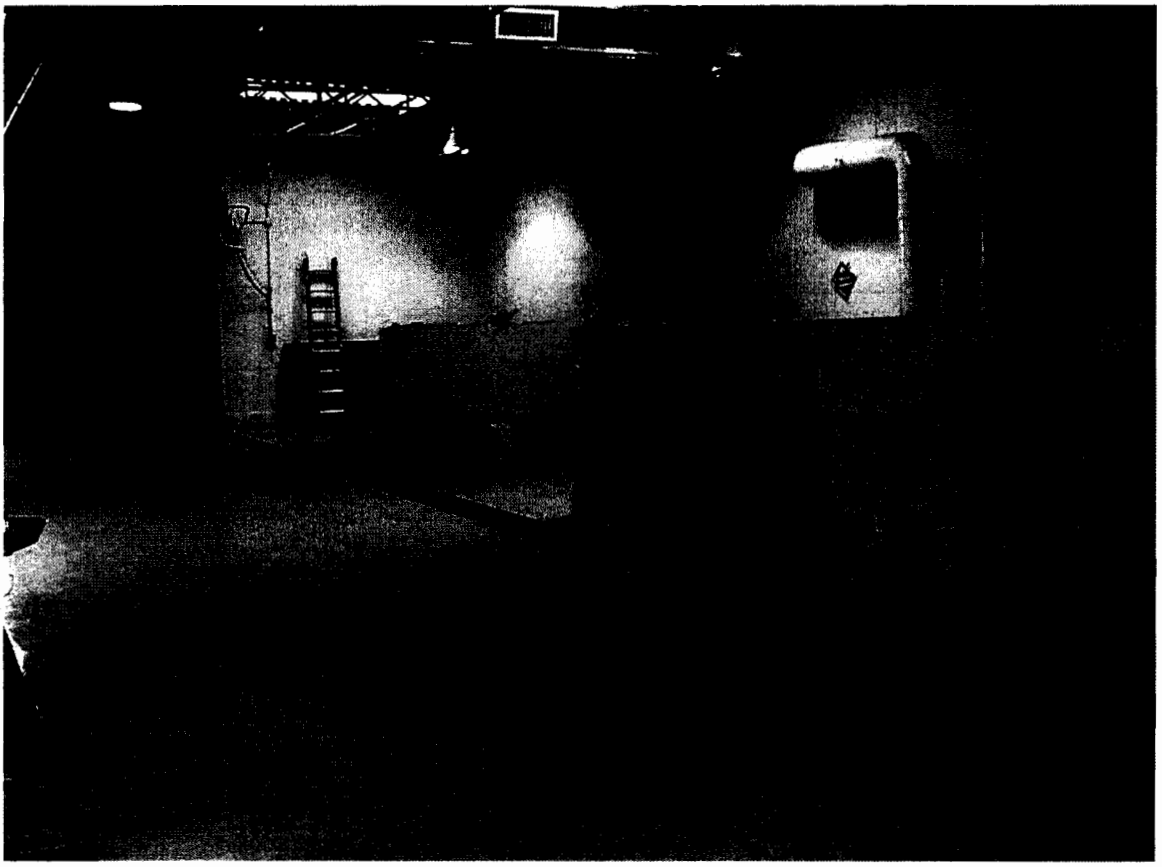
RCRA Id # VA8 800 010 763



Bldg. B29: <90 day storage, another view of the storage area showing the bays where the waste is stored.

41
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Wallops Island, Virginia 23337
G. Houghton
RCRA Id # VA8 800 010 763

Bldg. B29: <90 day storage, this is a view of the outside of the building. Containers in the background are empties.

42
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Bldg. B29: <90 day storage, view of the other entrance to the storage building.

45
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NOAA, this container held waste mineral spirits. It was closed and labeled. Just to the right is an aerosol can puncturing device. It was also closed and labeled. The total amount of waste did not exceed 55 gallons.

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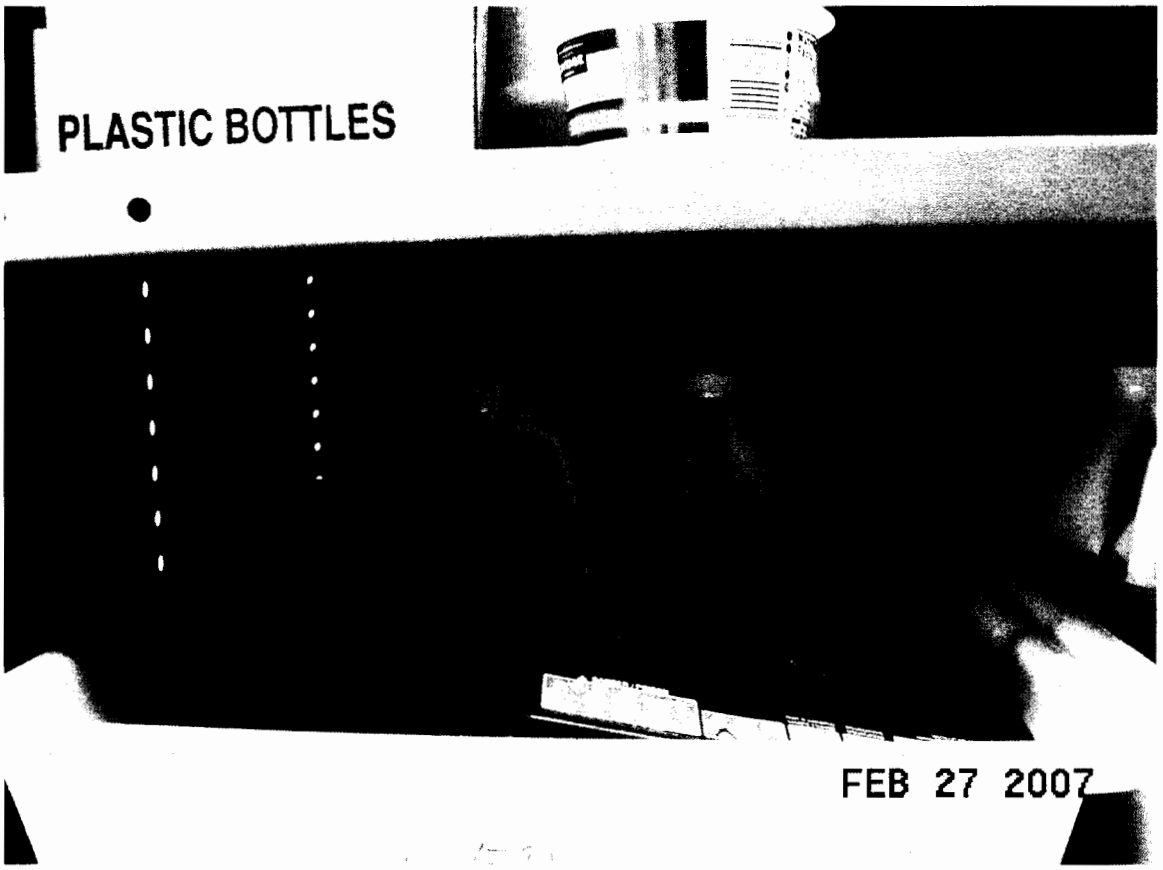

NOAA, this tub held universal waste lead acid batteries and NICD batteries. Also in the tub was two gallon jugs of useable muratic acid.

47
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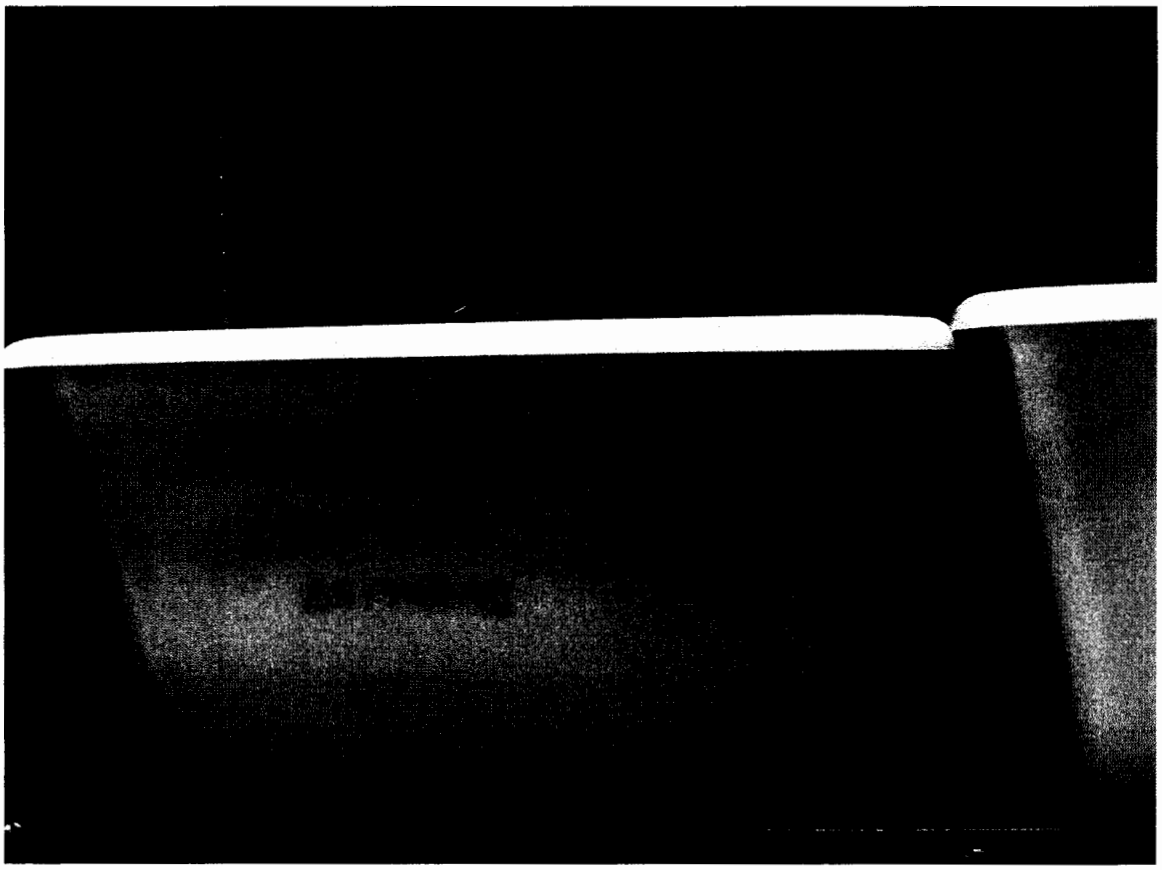

NOAA, out side of the tub used to hold the acid and batteries in photo 46

48
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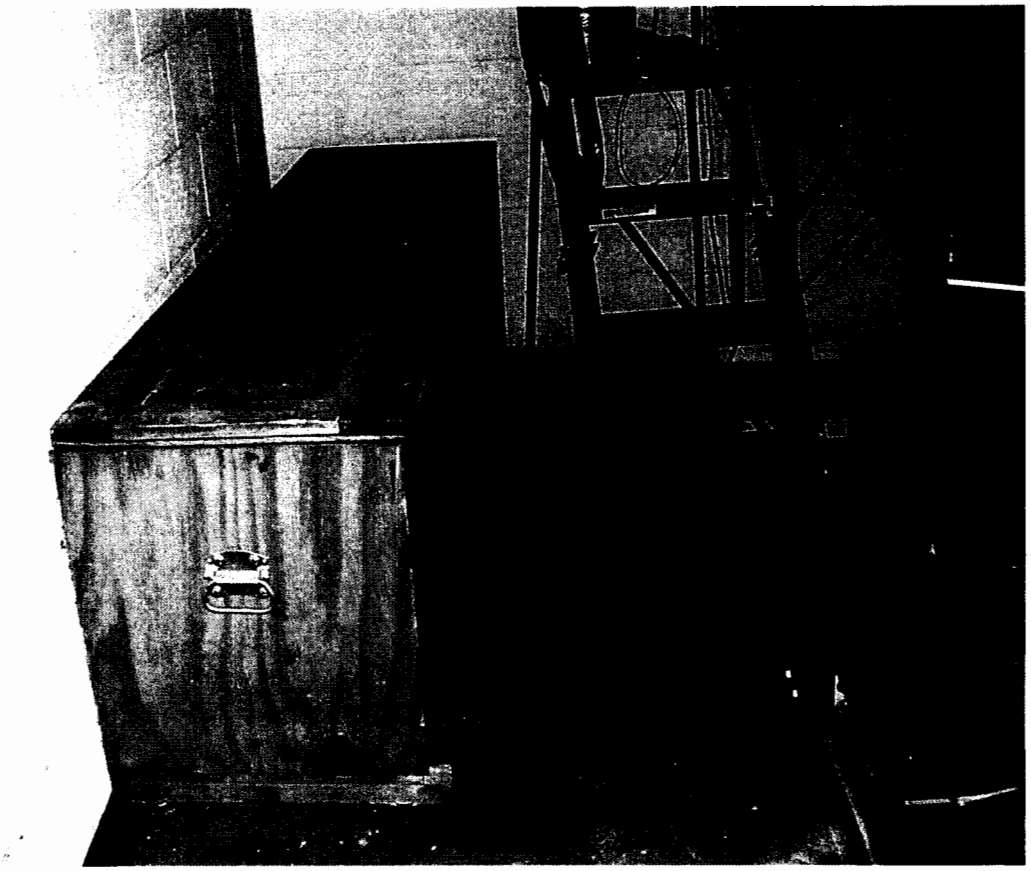


NOAA, this box contains fluorescent light tubes, a universal waste. The box was labeled as a universal waste but not dated.

This checklist is intended solely to assist inspectors in structuring an inspection and to help them ensure that common regulatory issues are not overlooked. It is not necessarily intended to represent an accurate record of the inspector's findings or observations. Notations and other comments on the checklist are not always to be viewed as direct observations by the inspector or actual fact, but may instead reflect claims by facility personnel or tentative responses which require further investigation for confirmation.

EPA GENERATOR CHECKLIST

2-27-07

(Does not apply to Universal Waste Handlers)

Name of Facility: Wallops Island Flight Facility

Address of Facility: NASA - Goddard Space Flight Ctr
Bldg F 160 Mail Code 250.W
Wallops Island, VA 23337

EPA I.D. Number: VA8 800 010 763

SIC CODE: 9661

Phone: 757-824-1718

Name/Title of Facility Representative: Joel Mitchell (1127)
MARIANNE Sinko (2127)

I. General

1. Provide a brief description of the type of operation(s) that produces hazardous waste at this facility:

See Report

2. Does the facility perform the following on-site:

a. storage (>90 day or >180 day for SQG) of hazardous waste? yes (no)

b. treatment of hazardous waste? yes (no)

c. disposal of hazardous waste? yes (no)

(if yes, complete appropriate TSD checklists)

261.4

3. Is the facility subject to any exclusions for its hazardous waste? yes (no)

If yes, list the waste and the basis for exclusion:

_____

_____

262.11(c)

4. Has the facility properly determined whether all of its waste exhibits any of the characteristics of hazardous waste? (yes) no

If yes, describe what this determination was based upon (i.e., testing or knowledge of process/materials used).

_____

_____

If no, describe omissions:

_____

_____

5. Has the facility failed to notify EPA/State of any of its hazardous waste management activities, including locations of all hazardous waste accumulation areas? yes (no)

If yes, describe: _____

_____

_____

_____

II. Manifest

Complete this section only if facility ships hazardous waste off-site.

262.20(a)
1. Does the facility use the Uniform Hazardous Waste Manifest whenever transporting hazardous waste? yes no

If no, explain: _____

_____

_____

If yes, review a representative number of manifests and indicate whether they contain:

a. Generator's name, mailing address, telephone number and EPA ID number?
yes no

b. Transporter's name and EPA ID number? yes no

c. DOT waste description, including proper shipping name, hazardous waste class and DOT identification number? yes no

d. Number and type of containers (if applicable)?
yes no

e. Quantity of each waste transported? yes no

f. Name, EPA ID number and site address of facility designated to receive the waste?
yes no

g. The following certification? yes no

"I hereby declare that the contents of this consigment are fully and accurately described above by proper shipping name and are classified, packaged, marked, and labelled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

Unless I am a small quantity generator who has been exempted by statute or regulation from the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the

method of treatment, storage or disposal currently available to me which minimizes the present and future threat to human health and environment."

262.23(a)
2. Did the generator:

a. Sign and date the manifest? (yes) no

b. Obtain the handwritten signature and date of acceptance from the initial transporter? (yes) no

c. Ensure that return copies of the manifest from the designated TSD facility were properly signed and dated?
(yes) no

d. Retain a copy of the signed manifest for at least three years? (yes) no

The inspector should obtain copies of <u>any</u> manifests that are found to have problems.

III. Pre-Transport Requirements

Complete this section only if the facility ships hazardous waste off site.

1. Is there any indication that the facility is:

262.30

a. Not packaging its waste in accordance with DOT regulations (49 CFR Parts 173, 178 and 179)? yes (no)

262.31

b. Not labelling each package in accordance with DOT regulations (49 CFR Part 172)? yes (no)

262.32(a) & (b)
c. Not marking each container of 110 gallons or less with the words "hazardous waste -----" or each package of hazardous waste in accordance with DOT regulations (49 CFR Part 172)? yes (no)

If yes, explain:_____

_____

262.33
2. Does the facility placard or offer the transporter placards for its hazardous waste shipments? (yes) no

IV. Waste Accumulation

1. Does the facility utilize the following types of hazardous waste accumulation:

a. **Satellite** accumulation? (yes) no

b. Less than 90 day storage? (yes) no

Answer the following questions if the generator has satellite accumulation area(s).

262.34(c)(1)
2. Is satellite accumulation area(s) near the point of waste generation and under the control of the operator of the process actually generating the waste? (yes) no

If no, describe: _____

_____

_____

_____

262.34(c)(1)
3. Are there multiple satellite accumulation areas for any one process that generates hazardous waste? (yes) no

If yes, describe: NOAA has a location with 2 containers - See Report

_____

_____

_____

262.34(c)(1)
4. Is the waste stored in container(s)? (yes) no

265.171
5. Are container(s) in good condition? (yes) no

If no, explain: _____

_____

_____

_____

262.34(c)(1)
6. Are container(s) marked with the words "hazardous waste" or the actual contents of the container(s)? (yes) no

265.173(a)
7. Are container(s) kept closed? (yes) no

265.171
8. Are any container(s) leaking? yes (no)

If yes, describe: _____

_____

_____

_____

262.34(c)(1)
9. Has the facility accumulated more than 55 gallons of hazardous waste or more than 1 quart of acutely hazardous waste in a satellite accumulation area? yes (no)
(F020 to FO23, FO26 & F027 and P waste)

If yes:

262.34(c)(2)
a. Are the container(s) holding excess waste dated as to when accumulation began?
yes no

b. Does the excess waste comply with the less than 90 day storage requirements (40 CFR Part 262.34(a)) within three days of the time when accumulation of such excess waste began? yes no

Answer the following questions if the facility has less than 90 day storage.

262.34(a)(4)
10. Does the facility maintain personnel training and other records required in 40 CFR Part 265.16? yes no

If yes, do these records include:

265.16(d)(1)
a. Job title for each position related to hazardous waste management and the employee filling each job? yes no

265.16(d)(2)
b. A written job description for each position?
yes no

265.16(d)(3)
c. A written description of the type and amount of training that will be given to each person? yes no

265.16(d)(4)
d. Records that document that the training or job experience required by facility personnel to effectively respond to emergencies and otherwise manage hazardous waste in a proper manner has been successfully completed? yes no

265.16(b)
11. Have facility personnel successfully completed the required training or job experience within six months after occupying the position? yes no

265.16(c)
12. Do facility personnel take part in an annual review of the initial training requirements and update them as necessary? yes no

262.34(a)(4)
13. Does the facility maintain an adequate preparedness and prevention program as required in 40 CFR Part 265 Subpart C?
yes no

Is the facility equipped with:

265.32(a)
a. Internal communications or alarm system? (yes) no

265.32(b)
b. Telephone or hand-held two-way radio? (yes) no

265.32(c)
c. Portable fire extinguishers or other fire control equipment, spill control equipment and decontamination equipment? (yes) no

265.32(d)
d. Adequate volume of water? (yes) no

265.33
14. Does the facility test and maintain the above equipment to assure its proper operation?
(yes) no

265.35
15. Is there sufficient aisle space to allow the unobstructed movement of personnel and equipment to areas where hazardous waste are located in the event of an emergency? (yes)
no

265.37(a)(1)
16. Has the facility made arrangements with local authorities to familiarize them with the layout of the facility and the nature/hazards of the hazardous waste handled at the facility?
(yes) no Facility has its own Fire Department

262.34(a)(4)
17. Has the facility prepared a **contingency plan** and is it maintained at the facility?
(yes) no

If yes, does it contain the following:

265.52(a)
a. Description of the actions that are to be taken in case of an emergency (all potential types of emergencies should be identified)? (yes) no

265.52(c)
b. Description of arrangements made with local authorities? (yes) no

265.52(d)
c. Current list of emergency coordinators' names, addresses and phone numbers (office and home)?
(yes) no

265.52(e)
d. List of all emergency equipment at the facility, including locations, descriptions and relevant capabilities? (yes) no

265.52(f)
e. Evacuation plan for facility personnel? (yes) no

The inspector should obtain a copy of the facility's contingency plan if any problems are found.

265.53(b)
18. Were copies of the contingency plan submitted to local authorities that may provide emergency services? (yes) no WFD

19. Has the facility's contingency plan ever failed in an emergency? yes no (N/A)

If yes:

265.54(b)
a. Was the contingency plan immediately amended? yes no

265.54(c), (d) & (e)
20. Was the contingency plan amended when either the facility or its operations, list of emergency coordinators or list of emergency equipment had changed? yes no (N/A)

If no, describe: _____

_____

265.56(j)
21. If the contingency plan is implemented, does the facility record the time, date and details of the incident in its operating log and submit a written report of the incident to the Regional Administrator or the appropriate state agency within 15 days? yes no (N/A)

262.34(a)(1)
22. What is the method of waste storage:

Containers? (yes) no

Tanks? yes (no)

Containment Buildings? yes (no)

Does the facility manage any f the following units for hazardous waste? NONE

Ground Water Monitoring	Surface Impoundments
Waste Piles	Land Treatment
Landfills	Incinerators
Thermal Treatment	Chem. Physical or Bio Treat.

yes no

If so, describe: _____

_____

_____

If the facility uses either containers or tanks for <90 day waste accumulation the inspector will need to complete the appropriate sections of the Air Emission Standards Checklist (40 CFR 265 Subpart CC). (Effective Date - December 6, 1996)

CONTAINER STORAGE.

262.34(a)(2)&(3)
23. Are the container(s) marked with the words "Hazardous Waste" and the date that waste accumulation in that container begins? (yes) no

262.34(a)
24. Based upon accumulation dates, have any container(s) been in storage for more than 90 days? yes (no)

If yes, the inspector should complete the appropriate TSD checklists.

265.171
25. Are container(s) in good condition? (yes) no

If no, explain: _____

_____

_____

265.172
26. Are container(s) made of or lined with materials which will not react with or be incompatible with the waste they are storing? (yes) (no) Geo

265.173(a)
27. Are container(s) kept closed? (yes) no

265.173(b)
28. Are containers(s) opened, handled or stored in a manner which may rupture the container or cause it to leak?
yes (no)

If yes, describe: _____

_____

_____

265.171
29. Are any container(s) leaking? yes (no)

If yes, describe: _____

_____

_____

265.174
30. Are container storage area(s) inspected at least weekly and is an adequate inspection record/log maintained? (yes) no

If no, explain: _____

_____

265.176
31. Are container(s) holding ignitable or reactive waste located at least 15 meters (50 feet) from the facility's property line? (yes) no N/A

32. Are incompatible wastes placed in the same container(s)? yes (no)

If yes:

265.177(a) & 265.17(b)
a. Is there any evidence that conditions of extreme heat or pressure, fire or explosion, violent reactions or toxic emissions occurred? yes no

If yes, describe:_____

If N/A, skip to question 16

If no, describe below what were these chemicals used for

_____

_____

14. How did the facility classify the waste containing the organic solvents listed in the F001 - F005 waste codes (circle the appropriate waste code)?

(D001) TC (F001 -F005) P or U Other(describe)

_____

_____

_____

15. Is there any evidence that solvent waste was misclassified?

Yes (No)

If yes, describe

_____

_____

_____

268.2(f) 268.40 - 268.48

16. Does the facility analyze its waste for TOC and TSS to determine proper treatability group (i.e., wastewater or non-wastewater) or in the case of D001, proper waste subcategory)? **Yes (No) N/A**

If no, describe below how this determination is made:

Knowledge + MSDS

17. Does it appear that any other restricted waste was misclassified or placed in the wrong treatability/sub-category group? **Yes** **No**

If yes, describe:

18. Does the facility, in any way, mix/aggregate/dilute any of its restricted hazardous waste with another hazardous waste, non-hazardous waste or non-waste material prior to (1) storage, (2) treatment or (3) disposal (include burning/thermal treatment of waste where no cyanides or LDR organics are involved since this is also dilution)? **Yes** **No**

If yes, describe the wastes involved, when, where and why it's done or other important circumstances. **Note whether dilution of an ignitable, corrosive or reactive waste, except D003 reactive cyanide, occurs as a result of treatment in a permitted facility (includes impoundments). If the treatment method provided is effective for that type of waste or is specified as the technology standard or the prohibited waste is treated in a surface impoundment in accordance with 268.4 this type of dilution is permissable.**

268.3(a)

19. Based on your observations, does it appear that the facility is using dilution as a substitute for appropriate/legitimate treatment or to improperly switch treatability group (i.e., wastewater vs non-wastewater)?

Yes **No**

If yes, describe as necessary:

_____

_____

_____

20. In the case of a mixture of wastes with both concentration level treatment standards and specified treatment technology, does the facility recognize that both must be achieved?

Yes **No** **N/A**

268.9(b)

21. Where waste or waste mixtures have both characteristic and listed waste codes, does the facility recognize that the treatment standard associated with each characteristic and listed waste must be met unless the characteristic constituent is specifically addressed in the treatment standard for the listed waste?

Yes **No** **N/A**

268.7(a), 268.9(a)&(c) & 268.40(e)

22. Does the generator recognize that any underlying hazardous constituents reasonably expected in its characteristic waste, whether mixed with listed waste or not, must be addressed in LDR notifications and/or certifications? **Yes** **No** **N/A**

268.9(d)

23. Does the facility send treated characteristic waste that is no longer hazardous to a Subtitle D landfill?

Yes **No** **N/A**

If yes:

a. Has it placed a one-time notification and certification in its files and sent a copy to the EPA Regional Administrator/State Director? **Yes** **No**

b. Is the notification and certification updated whenever the process or operation generating the waste changes and/or if the Subtitle D facility receiving the waste changes?

Yes **No** **N/A**

24. Does the facility generate lab packs? **Yes** **No**

If no, skip to question 27 No Lab pack manifest observed

25. Are there Appendix IV wastes (including mercury wastes) in these lab packs? **Yes** **No**

~~No~~

268.7(a)(9)

26. Are alternate treatment standards being applied?

Yes **No**

If no, are the proper waste/constituent specific treatment standards being applied? **Yes** **No**

If alternate treatment standards are being applied -

DO:

The lab packs comply with 264.316 for packaging
Not contain any Appendix IV compounds
Lab packs are incinerated as per 265 Subpart O

Has the generator submitted a notice to the treatment facility, with its initial shipment of waste, of all waste codes contained in the lab packs? **Yes** **No**

Has the generator certified that its lab pack contains none of the wastes identified in Appendix IV?

Yes **No**

D009 F019 K003 K005 K006 K062 K071 K100 K106
P010 P011 P012 P076 P078 U134 U151

268.7(a)(5)

27. Does the facility treat any of its hazardous wastes or contaminated soil in 90 day tanks, containers or containment buildings to meet the applicable treatment standards, which may include alternative soil treatment standards adopted by the State?

Yes (**No**)

If yes, has the facility prepared a waste analysis plan which includes frequency of testing? **Yes** **No**

If yes, is the plan kept on site in the facility's files? **Yes** **No**

268.7(a)(2)

28. Has the generator submitted a one time written notice with the initial shipment of waste or contaminated soil to each treatment or storage facility if its waste does not meet applicable treatment standards? (Yes) No N/A Sample manifest w/ LDR Attached

If yes, answer the following questions pertaining to notifications:

268.7(a)(2)

a) Do the notifications include the EPA Hazardous Waste Number? (Yes) No

268.7(a)(2)

b) Do the notifications include the underlying hazardous constituents for characteristic wastes as well as the waste constituents that the treater should monitor if monitoring will not include all regulated constituents for wastes F001-F005 and F039 ? (Yes) No N/A

268.7(a)(2)

c) Do the notifications specify whether the waste is a non-wastewater or wastewater and applicable sub-categories? (Yes) No N/A

268.7(a)(2)

d) Do the notifications include the manifest number associated with the shipment of waste? (Yes) No

268.7(a)(2)

e) For hazardous debris which is using the alternative treatment technologies, do the notifications include the contaminants subject to treatment? Yes No (N/A)

268.7(a)(2)

f) Do the notifications include available waste analysis data?

Yes No (N/A)

268.7(a)(2)(i)

g) For contaminated soil, is there a certification statement signed by an authorized representative indicating its LDR status? Yes No (N/A)

268.7(a)(3)(i)

29. Has the facility submitted, with the initial shipment of waste or contaminated soil to each treatment, storage or disposal facility, a one time written notice that its waste meets the appropriate treatment standards? Yes No (N/A)

If yes, answer the following questions pertaining to notifications:

268.7(a)(3)(i)

a) Do the notifications include the EPA Hazardous Waste Number? **Yes** **No**

268.7(a)(3)(i)

b) Do the notifications include the underlying hazardous constituents for characteristic wastes as well as the waste constituents that the treater should monitor if monitoring will not include all regulated constituents for wastes F001-F005 and F039 ? **Yes** **No** **N/A**

268.7(a)(3)(i)

c) Do the notifications specify whether the waste is a non-wastewater or wastewater and applicable sub-categories? **Yes** **No** **N/A**

268.7(a)(3)(i)

d) Do the notifications include the manifest number associated with the shipment of waste?
Yes **No**

268.7(a)(3)(i)

e) Do the notifications include the required certification statement signed by an authorized representative?
Yes **No**

268.7(a)(3)(i)

f) Do the notifications include available waste analysis data?
Yes **No** **N/A**

268.7(a)(3)(ii)

30. If the waste changes, has the generator sent a new notice and/or certification to the receiving facility and placed a copy in their files? **Yes** **No** **N/A**

268.7(a)(6) 268.7(a)(8)

31. Has the generator retained in on-site files the following materials:

a) all data used to determine whether its waste is restricted or meets applicable treatment standards upon generation, including knowledge of waste and test results? **Yes** **No**

b) copies of all notices and certifications for the past three years that were sent to treatment/disposal facilities and contractural agreements where the waste and the treater stay the same? **Yes** **No**

55 FR 22662(A.1) 268.7(a)(7)

32. If the generator treats a restricted waste in a WWTP having an NPDES permit, is there a statement

in its operating log indicating that the WWTP is treating a RCRA restricted waste?

Yes **No** **N/A**

Additional Comments:

This checklist is intended solely to assist inspectors in structuring an inspection and to help them ensure that common regulatory issues are not overlooked. It is not necessarily intended to represent an accurate record of the inspector's findings or observations. Notations and other comments on the checklist are not always to be viewed as direct observations by the inspector or actual fact, but may instead reflect claims by facility personnel or tentative responses which require further investigation for confirmation.

INSPECTION CHECKLIST
AIR EMISSIONS STANDARDS
FOR
TANKS, SURFACE IMPOUNDMENTS AND CONTAINERS
(Part 264/265 Subpart CC)

Note: Does not apply to satellite accumulation areas, containers less than 26 gal or small quantity generators.

DATE: 2-27-07

Name of Facility -- Wallops Island Flight Facility

Location of Facility -- NASA-Goddard Space Flight Center

Name of Inspector -- G Houghton

VA8 800 010-263

A. General

1. If the facility claims that the Subpart CC regulations are not applicable to their waste management unit(s) or that the unit(s) are exempt from regulation, explain the reason for the claim.

B. Waste Determination

265.1084(a)(1)

1. Does the facility determine the VOC content of its hazardous waste at the point of waste origination? (yes) no

265.1084(a)(2)

If yes, does the facility determine the VOC content of its hazardous waste by (a) direct measurement or (b) using knowledge of the waste (circle one)?

265.1084(a)(4)(i)

If (b), has the facility prepared and maintained records showing the information used as the basis for the O/O's knowledge of the hazardous waste stream's average VOC concentration? yes no

265.1084(a)(3)(ii)(B)

2. Were at least four representative samples collected within a year to determine VOC content? yes no (N/A)

3. Does the facility perform any other waste determinations as required by the Subpart CC regulations? yes (no)

If yes, describe:

_____

_____

_____

C. Tanks (40 CFR §265.1085) NO RCRA TANKS

skip this section if the facility does not use tanks for waste management

1. Which of the following emissions control devices does the facility employ for its tanks that manage hazardous waste with a VOC concentration >500 ppmw (circle appropriate ones)

   a. fixed roof (Level 1 control (265.1085(c)))

   b. fixed roof equipped with an internal floating roof (Level 2 control (265.1085(d)))

   c. external floating roof (Level 2 control)

   d. tank vented through a closed vent system to a control device (Level 2 control)

   e. pressure tank (Level 2 control)

   f. tank located inside an enclosure that is vented through a closed-vent system to an enclosed combustion control device (Level 2 control)

g. other

h. none

If (g) other, describe:

_____

_____

2. Does it appear as though the device(s) being used is designed and operated properly (i.e., no emissions were likely to occur)? yes no N/A

If no, describe:

_____

_____

_____

265.1084(c)(1)

3. If a fixed-roof tank (Level 1 control) is used for storage of a hazardous waste with >500 ppmw VOC, is the maximum vapor pressure of the waste determined and the results maintained in the facility's records? Yes No N/A

265.1085(b)(2)

4. Are tank(s) used for waste stabilization utilizing a Level 2 control? Yes No N/A

D. Surface Impoundments (40 CFR §265.1086) NONE

skip this section if the facility does not use surface impoundments for waste management

1. Which of the following emissions control devices does the facility employ for its surface impoundments that manage hazardous waste with a VOC concentration >500 ppmw (circle appropriate ones)

a. floating membrane cover

b. cover that is vented through a closed-vent system to a control device

c. other

d. none

If (c) other, describe:

_____

_____

2. Does it appear as though the device(s) being used is designed and operated properly (i.e., no emissions were likely to occur)? yes no N/A

If no, describe:

_____

_____

_____

E. Containers (40 CFR §265.1087)

skip this section if the facility does not use containers for waste management

1. Which of the following emissions control devices does the facility employ for its containers that manage hazardous waste with a VOC concentration >500 ppmw (circle appropriate ones)

(a.) container meets DOT regulations - i.e., the container is closed and there are no visible holes, gaps, cracks or other openings in the container (Level 1 (265.1087(c)) or Level 2 (265.1087(d)) standard)

(b.) cover and closure devices that form a continuous barrier over the container openings (Level 1 standard)

c. organic-vapor suppressing barrier placed on or over the hazardous waste (Level 1 standard)

d. container that operates with no detectable organic emissions as defined in §265.1081 (Level 2 standard)

e. container demonstrated within the past 12 months to be vapor-tight (Level 2 standard)

f. container that is vented directly through a closed-vent system to a control device (Level 3 (265.1087(e)) standard)

g. container that is vented inside an enclosure which is exhausted through a closed-vent system to a control device (Level 3 standard)

h. other

i. none

If (h) other, describe:

_____

_____

2. Does it appear as though the device(s) being used is designed and operated properly (i.e., no emissions were likely to occur)? yes no N/A

If no, describe:

_____

_____

_____

265.1087(b)(1)(i) & (ii)

3. Are containers between 26 & 122 gallons not used for a waste stabilization process and containers greater than 122 gallons not in light material service provided with Level 1 control?

Yes No N/A

In light material service means the container is used to manage a material for which both of the following conditions apply: the vapor pressure of one or more of the organic constituents in the material is greater than 0.3 kilopascals (kPa) at 20 °C and the total concentration of the pure organic constituents having a vapor pressure greater than 0.3 kPa at 20 °C is equal to or greater than 20 percent by weight.

265.1087(b)(1)(iii)

4. Are containers greater than 122 gallons in light material service provided with Level 2 control? Yes No N/A

265.1087(b)(2)

5. Are containers greater than 26 gallons used for a waste stabilization process provided with a Level 3 control?

Yes No N/A

F. Inspections & Monitoring NONE @ this Location

complete this section if the facility is using air emission controls

265.1089(b)

1. Has the facility developed and implemented a written plan and schedule to perform all required inspection and monitoring activities of its air emissions control equipment?
   yes no

265.1085(k)(1) & 265.1086(f)(1)

2. In the event of a defect involving a tank or surface impoundment, did the facility make first repairs no later than 5 calender days after detection and complete repairs no later than 45 calender days after detection?
   yes no N/A

265.1087(c)(4)(iii), 265.1087(d)(4)(iii)

3. In the event of a defect involving a container using Container Level 1 or Level 2 controls, did the facility make first repairs no later than 24 hours after detection and complete repairs no later than 5 calender days after detection?
   yes no N/A

G. Recordkeeping

265.1084(a)(3)(ii)(C)

1. Does the facility have a written sampling and analysis plan which describes the procedures by which representative samples will be collected and handled and is a copy maintained on-site? yes no

265.1090(b)(1)(ii) & (c)(3)

2. Does the facility maintain copies of inspection records, including dates of inspections and a description of defects and corrective actions taken to repair defects or problems involving its air emissions control equipment, for its tanks and surface impoundments? Yes No N/A

265.1087(c)(5)

3. Does the facility maintain a copy of the procedure used to determine that containers 122 gal which do not meet applicable DOT regulations are not managing hazardous waste in light material service? Yes No N/A

265.1090(a)

4. Are the above records maintained in the operating record for a minimum of three years?
   yes no N/A

COMMENTS:

NASA Facts

National Aeronautics and Space Administration
Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, VA 23337

FS-1998-07-015-GSFC

NASA Balloon Program

For decades balloons have been used to conduct scientific studies. While the basics of ballooning remain unchanged, balloons have increased in size, and their dependability has greatly improved. The Goddard Space Flight Center's Wallops Flight Facility oversees operations of NASA's scientific balloons including management of the National Scientific Balloon Facility (NSBF) in Palestine, Texas. Wallops provides balloons, helium and operational support for balloon launches from permanent launch sites in Palestine, Texas, and Ft. Sumner, N.M., and remote sites in the United States, Canada, Australia, New Zealand, and Antarctica.

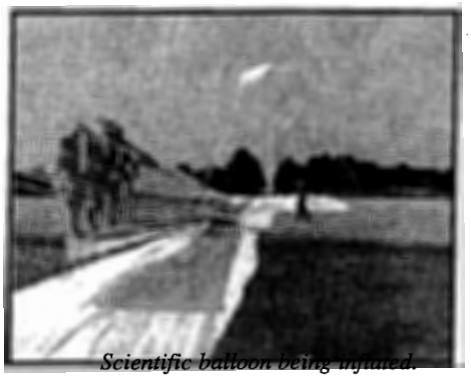
NASA scientific balloon prior to launch.

What are the NASA balloons?

NASA balloons are made of a thin polyethylene material, (.8 mil), about the same thickness as an ordinary sandwich wrap. Referred to as scientific balloons, they are very large. When fully inflated, they range up to 40 million cubic feet in volume and 600 feet in diameter and are taller than a 60-story building. The system includes a balloon, a parachute and a payload that carries instruments necessary to conduct a scientific experiment. Fully inflated scientific balloons, can carry a payload weighing as much as 8,000 pounds, which is about the weight of three small cars.

Why use a balloon?

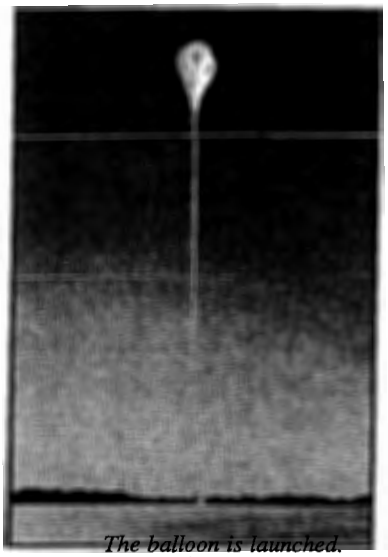
Balloons offer a low-cost, quick response method of doing scientific investigations. They can be launched from where the scientist needs to conduct an experiment and can be ready for flight in as little as six months. Experiments flown on balloons provide information on the atmosphere, the universe, the Sun and the near-Earth space environment. The scientific balloon also is a valuable tool in developing future scientists. Undergraduate and graduate students can conduct and complete a scientific study in the same length of time it takes them to graduate, two to five years.



Scientific balloon being inflated.

How does it work?

The balloon flight mission is relatively simple. The balloon is partially filled with helium and launched with the payload suspended beneath it. As the balloon rises, the helium expands and fills the balloon until it reaches full inflation. Two to three hours after launch, the balloon will reach peak altitude. As the balloon drifts across the sky, the experiment package in the payload gathers scientific data.



The balloon is launched.

When the experiment is complete, a radio command is sent from a ground station to separate the payload from the balloon. This creates a tear in the balloon material, destroying the balloon and causing it to fall to the Earth. A parachute opens and floats the payload back to the ground. Recovering the payload allows the experiment package to be reused on another flight.

Artist's rendition of fully inflated ULDB at float.

What's in the future?

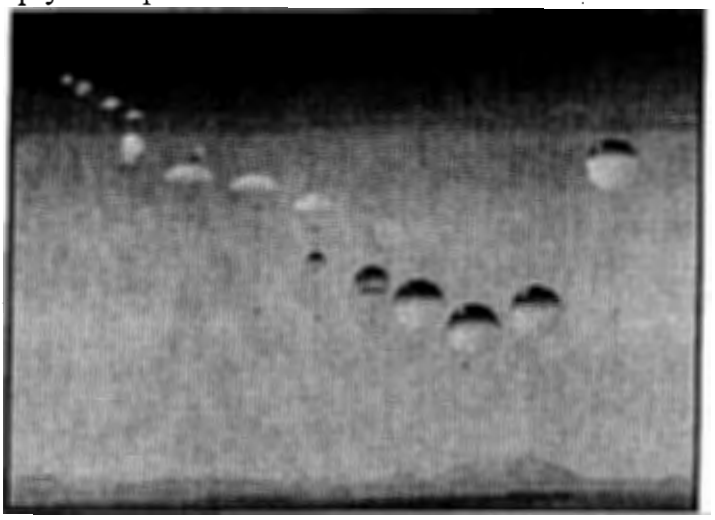
The countdown has begun for Earth-orbiting balloons. NASA presently supports 25 scientific balloon launches yearly with a success rate in excess of 92 percent. The demand for scientific balloons is increasing. Balloons allow payloads to be lifted without the vibrations and G-forces associated with rockets. The payload is recoverable which allows for multiple flights of the same instruments.

NASA presently flies conventional and long duration balloons. A conventional balloon flight will last from one to two days while a long duration balloon flight will last up to three weeks. These zero-pressure balloons are launched partly inflated and expand as they rise. They vent some of their gas as daytime temperatures rise in the stratosphere causing the balloon to expand up to its maximum design volume. As night approaches, the remaining gas shrinks causing the balloon volume to decrease and the balloon descends. In order to stay aloft, the balloon system must drop ballast. As a result, most zero-pressure balloon flights last for only a few weeks.

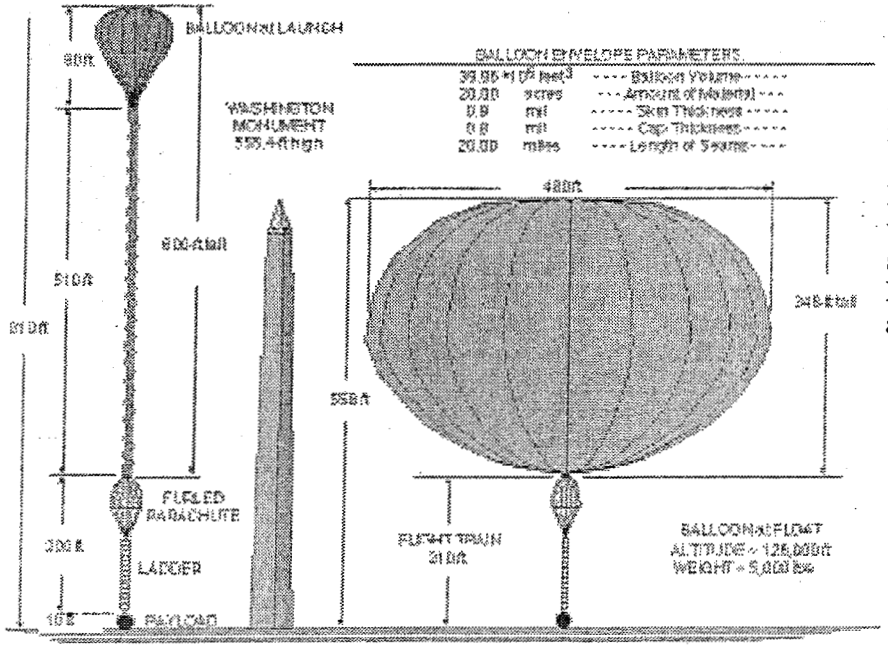
"Super pressure" balloons now being developed by NASA will float several-ton payloads through the stratosphere on missions lasting more than three months. Like the zero-pressure balloons, the ultra-long duration balloon (ULDB) also will be partially inflated when launched. Unlike the zero-pressure balloon, which has venting ducts in the bottom, the ULDB will be completely sealed.

The ULDB will maintain lift, size and shape and will not react to atmospheric influences. Highly durable composite plastic and fabric materials currently being developed will make this possible. The new balloon material will be capable of withstanding high internal pressures caused by solar heating. With 20 miles of seams in the balloon, adequate sealing procedures also have to be developed that can be used to fabricate reliable balloons from the new material.

Maintaining helium at a constant volume and density also will make the ULDB an extremely stable platform. The ULDB will allow scientists to gather more data over a much longer period. The first flight of the ULDB with a working payload is planned for 2003.



An example of a deployment sequence for planetary exploration.



Planetary Exploration

The new composite super-pressure balloon material will greatly enhance the prospects for use in planetary exploration.

Planetary exploration is embarking on a new era using planetary aerobots. These unmanned scientific exploration vehicles are designed to float like balloons for up to several months in the atmospheres of planets.

For further information about NASA's Scientific Balloons visit the following Web sites:

http://www.wff.nasa.gov/pages/scientificballoons.html
http://master.nsbf.nasa.gov

April 2002

NASA Facts

National Aeronautics and Space Administration
Goddard Space Flight Center, Wallops Flight Facility
Public Affairs Office
Wallops Island, VA 23337
(757) 824-1584

FS-2002-8-046-GSFC

NASA Wallops Flight Facility

NASA Goddard Space Flight Center's Wallops Flight Facility, located on Virginia's Eastern Shore, is a test site for aerospace technology experiments and supports scientific research through carrier systems and mission services, all with an intrinsic education component.

Scientific Research

Sounding rockets and balloons provide frequent low-cost flights in support of Space Science research missions and as a training ground for experimenters who will later participate in larger, observatory-class missions.

Artist's Rendition of NASA's Ultra-Long Duration Balloon

NASA's newly developed Ultra-Long Duration Balloon will greatly enhance scientific research on Earth and in planetary exploration.

Wallops science aircraft serve as a primary platform for low-altitude atmospheric, oceanographic, coastal zone and land centered research missions. The Facility also is exploring the use of small, low altitude uninhabited aerial vehicles to conduct Earth Science research.

Wallops' scientists conduct theoretical and experimental research on observational systems and techniques associated with Earth Science processes.

The Hitchhiker, Get-Away Special and Space Experiment Module provide for research and educational opportunities with small payloads aboard the Space Shuttle.

Wallops Mission.....

Enable scientific research through the development and deployment of low-cost, highly capable suborbital and orbital research, payload carriers and science platform mission services.

Enable aerospace technology and facilitate commercial use of space through advanced technology development, testing, operational support and commercial launch activities.

Enable education, outreach and innovative partnerships by providing science and technology opportunities and pursuing partnerships with academia, other government agencies and industry.

Aerospace Technology

Wallops Flight Facility has a 57-year heritage of providing launch range services. Through established partnerships with the Commonwealth of Virginia, Department of Defense and industry, as well as an in-depth understanding of the launch industry, Wallops continues to provide powerful tools to address the challenges facing the space transportation community.

The investment by NASA in resources at the Wallops Rocket Range, combined with the experience and expertise of Wallops personnel, provide for synergistic and comprehensive services.

NASA's Black Brant XII Sounding Rocket

This helps organizations reach their goals in scientific and technology advances through the same reliable, cost-effective manner that Wallops has provided throughout its history.

Wallops serves as an important resource to address critical range related issues that impede or otherwise impact the domestic launch industry's ability to be internationally competitive. The advanced Range Technology Initiative pursues focused technologies and processes that offer substantial near-term solutions to current problems involving safety and effectiveness of ground and flight systems that interact with ranges.

Wallops, in partnership with the Virginia Space Flight Center, serves as a proving ground for emerging commercial vehicle designs and technology.

The Wallops Research Airport serves as a national resource for supporting aviation and airport-related research. The Research Airport, with its three runways and two hangers, provides an ideal venue to conduct research in acoustics, runway friction, aviation and airport terminal area safety, air and ground-based instrumentation systems that focus on assuring safe, efficient and cost-effective aviation for the future.

Education

Wallops Flight Facility has a strong history of supporting education. The range of flight projects and mission capabilities make Wallops ideally suited to inspire the next generation of explorers.....as only NASA can.

Wallops conducts educational programs for students in kindergarten through graduate school, as well as, professionals.

Students prepare experiment for scientific balloon flight.

Student programs use sounding rocket, balloon and Shuttle payload activities to allow young explorers hands-on opportunities to develop experiments, participate in mission preparations and operations, and gather data in a space flight environment.

NASA's Management Education Center at Wallops provides professional development for the Agency's engineers, scientists, and business innovators.

Wallops also partners with external educational organizations whose objectives align with NASA's goals and Wallops' mission. Partnerships are currently in place with the University of Maryland, Eastern Shore, a Historically Black College and University, and New Mexico State University, a Minority Institution.

Interagency and Commercial Support

Other government agencies located at Wallops are the U.S. Navy, U.S. Coast Guard, National Oceanic and Atmospheric Administration and the Virginia Space Flight Center. These agencies share resources to carry out their missions. Other organizations that partner with Wallops include the Virginia Space Flight Academy, the Marine Science Consortium, and the U.S. Army Aberdeen Test Center.

The Wallops Main Base

Launch Sites on Wallops Island.

Wallops History

1945-1957 Pilotless Aircraft Research Station

During this time, Wallops was instrumental in providing the foundation for aerodynamic and heat transfer research by establishing a high speed aeronautical launch site that used rockets to propel aircraft models.

1958-1974 Wallops Station

Under the direction of President Dwight D. Eisenhower, 1958 marked the birth of NASA and the civilian space program. NASA research conducted at Wallops involved developing components for the manned space program including Mercury capsule escape and recovery techniques.

1975-1981 Wallops Flight Center

While continuing to act as a launch site for suborbital and orbital vehicles, Wallops expanded its horizons to include studies of Earth and ocean processes and the use of Wallops Research Airport for runway surface and aircraft noise reduction studies.

1982-2002 Wallops Flight Facility

Managing the sounding rocket and scientific balloon operations, Wallops is NASA's principal facility for management and implementation of suborbital research programs. Wallops also conducts Space Shuttle small payload and university class satellite management, observational Earth Science studies, provides aircraft flight services for scientific investigations, operates the Wallops Rocket Range and Research Airport and manages the Orbital Tracking Station.

A Look at the Future

The Wallops vision is to be a national resource for providing cost effective integration, launch and operation of suborbital and small orbital payloads. Wallops seeks to further scientific, educational and economic advancement by providing the facilities and expertise to allow frequent flight opportunities to a diverse customer base. Wallops will strengthen its educational programs in strong support of NASA's mission.

For further information about programs at NASA Wallops Flight Facility, visit our web site: http://www.wff.nasa.gov July 2002

WALLOPS MISSION

NASA Wallops Flight Facility's primary focus is on integration, launch and operation of suborbital and small orbital payloads and on serving as an operational test site for the next generation of low-cost launch technologies. Wallops mission elements include Suborbital Programs, Orbital Programs, Test Range and Interagency and Commercial Support.

Suborbital Programs

A NASA scientific balloon is prepared for launch.

Scientific Balloons

Scientific balloons, flying 1 to 14 days, provide a means for scientific investigations of the atmosphere, solar system and the rest of the universe.

The newly developed Ultra Long Duration Balloon will expand flight missions up to 100 days. Approximately 30 balloons are flown annually worldwide.

Sounding Rockets

The Sounding Rocket Program also conducts launches world-wide.

Sounding rockets provide an effective and inexpensive means of gathering data about the atmosphere and space. They also are used in the development and testing of instruments for orbital flight. Approximately 35 sounding rocket missions are conducted annually.

Aircraft and Remotely Piloted Vehicles

Wallops manages, maintains and operates aircraft to provide airborne science, test range and administrative support.

The scientific aircraft serve as platforms for Earth science research by NASA, other federal agencies and academic organizations. Wallops serves as an East Coast staging point for carrying out projects with Remotely Piloted Vehicles.

Orbital Programs

Orbital Projects

In 1998, Wallops assumed responsibility for managing small satellite programs such as University Class Explorer spacecraft and Space Shuttle-based small payloads such as the Get Away Specials.

Test Range

The Test Range consists of a rocket launch range, aeronautical research airport and associated tracking, data acquisition and ordnance operations. Suborbital and orbital vehicles are launched from Wallops Island.

The research airport located on the Main Base includes facilities, instrumentation and operating space for a wide variety of aircraft and aircraft related activities. The airport consists of three runways, two hangers, staffed control tower, crash-fire-rescue units and airport related instrumentation.

Orbital Tracking

Wallops provides around-the-clock tracking, command and data acquisition operations for many of NASA's low Earth orbiting spacecraft, NASA cooperative spacecraft and Department of Defense, commercial and foreign spacecraft.

The rocket launch range is located on Wallops Island.

Interagency and Commercial Support

Other government agencies located at Wallops are the U.S. Navy, U.S. Coast Guard, National Oceanic and Atmospheric Admistration and the Virginia Space Flight Center. These agencies share resources to carry out their missions.

Observational Science

The Observational Science Branch is responsible for theoretical and experimental research on observational systems and techniques associated with Earth science processes. One important part of this study is global change.

For further information about programs at NASAWallops Flight Facility,visit our homepage: http://www.wff.nasa.gov

March 2002

NASA Facts

National Aeronautics and Space Administration
Goddard Space Flight Center
Wallops Flight Facility
Public Affairs Office
Wallops Island, VA 23337
(757) 824-1584

NASA Wallops Flight Facility

NASA Goddard Space Flight Center's Wallops Flight Facility, located on Virginia's Eastern Shore, was established in 1945 by the National Advisory Committee for Aeronautics, as a center for aeronautic research.

The research and responsibilities of Wallops Flight Facility are centered around the philosophy of providing a fast, low cost, highly flexible and safe environment to meet the needs of the United States aerospace technology and science research interests.

1945 - 1957
Pilotless Aircraft Research Station

During this time, Wallops was instrumental in providing the foundation for aerodynamic and heat transfer research by establishing a high speed aeronautical launch site that used rockets to propel aircraft models. The station allowed researchers to overcome the limited capabilities offered by wind tunnels of the day.

1958 - 1974
Wallops Station

A Scout rocket being launched from Wallops Island on Oct. 19, 1967.

Under the direction of President Dwight D. Eisenhower, 1958 marked the birth of NASA and the civilian space program. This was to have a profound effect on the role Wallops played in the national effort.

NASA research conducted at Wallops involved developing components for the manned space program including Mercury capsule escape and recovery techniques.

Wallops provided range support for Scout launch vehicles, mobile research projects and research in re-entry and life-support systems used in the manned space program.

NASA Wallops Flight Facility Main Base

1975 - 1981
Wallops Flight Center

While continuing to act as a launch site for suborbital and orbital vehicles, Wallops expanded its horizons to include studies of Earth and ocean processes and the use of Wallops Research Airport for runway surface and aircraft noise reduction studies.

1982 - 1999
Wallops Flight Facility

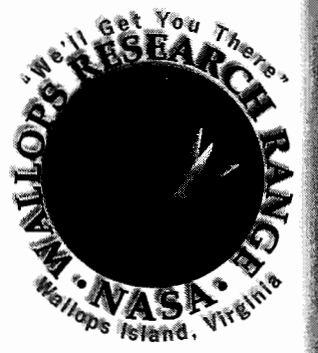
Wallops became NASA's principal facility for management and implementation of suborbital research programs.

Wallops' manages NASA sounding rockets and scientific balloon operations and provides launch support for Small Expendable Launch Services (SELVS). It also conducts observational Earth science studies, provides aircraft flight services for scientific investigations, operates the Wallops Test Range and manages the Orbital Tracking Station.

Mission 2000 --- A Look at the Future

The NASA vision for the Year 2000 and beyond is that Wallops will be a national resource for providing low-cost integration, launch and operation of suborbital and small orbital payloads. The Wallops mission will be to further scientific, educational and economic advancement by providing the facilities and expertise to allow frequent flight opportunities for a diverse customer base.

http://www.wff.nasa.gov/code840/

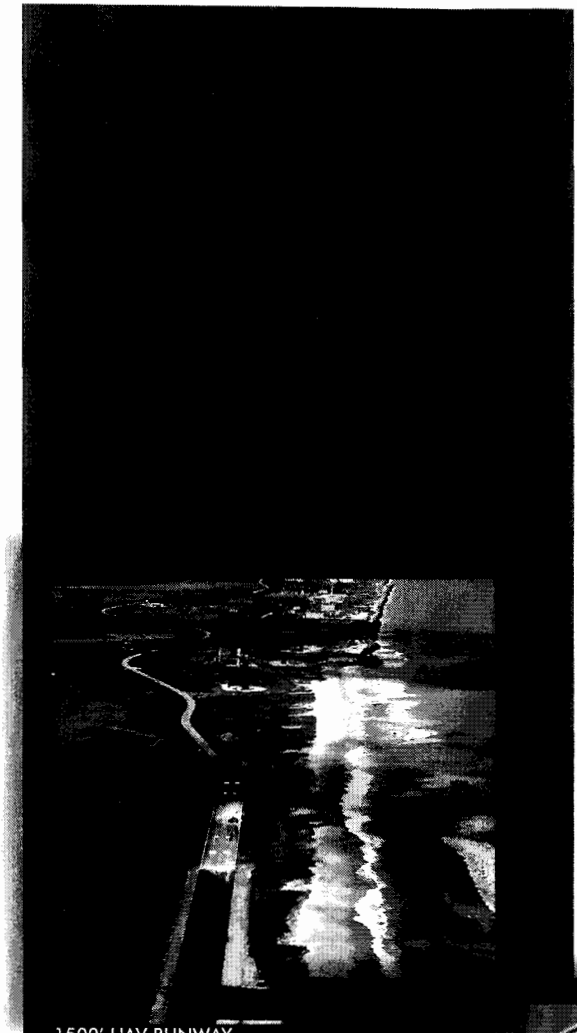


Wallops Research Range

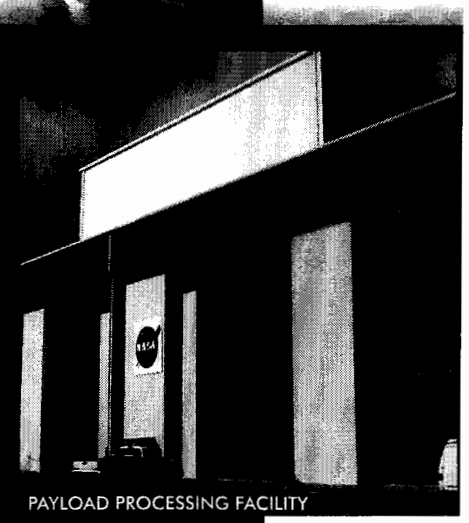
National Aeronautics and Space Administration

Goddard Space Flight Ce
Wallops Flight Facility
Wallops Island, Virginia

For More Information Cont
(757) 824-1955 or (757) 8
Or Please Visit Our Websit
http://www.wff.nasa.gov



1500' UAV RUNWAY



PAYLOAD PROCESSING FACILITY

"We'll Get You There!"

"We'll Get You There!"
WALLOPS RESEARCH RANGE
NASA
Wallops Island, Virginia

NASA WALLOPS
WALLOPS ISLAND, VA 23337
757.824.1955
FAX 757.824.2378

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WALLOPS RESEARCH RANGE

WALLOPS ISLAND, VIRGINIA

RESEARCH CARRIERS

- SOUNDING ROCKETS
- SCIENTIFIC BALLOONS
- UAVS
- RESEARCH AIRCRAFT
- SMALL SATELLITES
- OTHER EXPERIMENTAL CRAFT

TECHNOLOGY DEVELOPMENT & SCIENTIFIC RESEARCH

- RESEARCH CARRIER ADVANCEMENT
- RANGE TECHNOLOGY DEVELOPMENT & FLIGHT TESTING
- SPACE EXPLORATION TECHNOLOGY DEVELOPMENT & FLIGHT TESTING
- COASTAL & GLOBAL CLIMATE RESEARCH
- AEROSPACE FLIGHT HARDWARE DEVELOPMENT

- SAFETY ASSESSMENTS, IMPROVEMENTS & VERIFICATION
- WEATHER FORECASTING ADVANCEMENT

LABORATORIES & FACILITIES

- SUBORBITAL & ORBITAL LAUNCH FACILITIES
- FIXED & MOBILE RANGE INSTRUMENTATION
- RECONFIGURABLE RANGE CONTROL CENTER
- CONTROLLED AIRSPACE
- INTEGRATION LABS
- GPS LAB & FLIGHT SIMULATOR
- PAYLOAD PROCESSING
- FABRICATION FACILITIES
- ANECHOIC CHAMBER
- RF PATTERN MEASURING FACILITIES
- ENVIRONMENT SYSTEMS TEST FACILITIES

The provisions of this plan are to be implemented immediately whenever:

- There is any release of oil on the facility; or
- There is a fire, explosion, or release of a hazardous substance, which could threaten human health or the environment.

3.0 FACILITY DESCRIPTION

3.1 INSTALLATION HISTORY

Wallops Flight Facility was established in 1945 as a center for aeronautic research. Currently, the mission includes space science, earth science, communications, and data processing. The facility is federally owned with office buildings, launch ranges, and an airport. Historically and today, rocket launches, testing of aircraft, and other experiments are performed at WFF.

3.2 LOCATION

Wallops Flight Facility is located in Accomack County on the Eastern Shore of Virginia. Accomack County is bordered by Northampton County on the south, the state of Maryland on the north, the Atlantic Ocean on the east, and the Chesapeake Bay on the west. Accomack County is a part of the Delmarva Peninsula which is also bordered on the east and west by the Atlantic Ocean and the Chesapeake Bay, and by the Delaware Bay and River on the north.

The facility is composed of three separate land areas in close proximity to each other, the Main Base, Mainland, and Wallops Island. The Main Base encompasses 2,230 acres (902 hectares) and includes runways, aircraft hangars, office buildings, dormitories, and industrial shops (refer to Map 1 in Appendix I). Most administrative, technical, and facility support functions occur on the Main Base. The Main Base is bordered on the east by extensive marshland and creeks, which lead into Chincoteague Bay and Chincoteague Inlet. Little Mosquito Creek and its estuaries define the north and west borders of the Main Base. State routes 175 and 798 border the Main Base on the south and southeast, respectively.

The Mainland facilities include radar, antennae, and transmitter systems and associated buildings. The 100 acres (40 hectares) of the Mainland area are bordered by extensive marshland to the east, and by farmland to the south, west, and north.

Wallops Island is a barrier island located along Virginia's coast. It encompasses approximately 4,200 acres (1,700 hectares) surrounded by water and is approximately 7 miles (11 kilometers) long by 1/2-mile (0.8 kilometers) wide. Testing and launch facilities, storage buildings, and office buildings, which are utilized by NASA and its partners, are located on Wallops Island. The Atlantic Ocean borders Wallops Island to the east and the Chincoteague Inlet delineates the northern border. Marshland,

interlaced with small creeks, covers the entire western approach to Wallops Island. The north end of Assawoman Island abuts the southern tip of Wallops Island.

3.3 LAND RESOURCES

The topography of the facility and the surrounding area is of the Mid-Atlantic coastal region, and is generally flat with no significant contour deviations (refer to Maps 1 and 2 in Appendix I). The maximum elevation on the Main Base is approximately 40 feet (12.2 meters) above mean sea level (MSL). The Mainland consists of flat areas with gradual eastern slopes leading to the tidal marsh. The elevation of the Mainland reaches approximately 20 feet (6.1 meters) above MSL. The topography on the barrier islands changes due to the dynamics of the ocean currents and weather conditions. Presently, the highest elevation on Wallops Island is approximately 15 feet (4.6 meters) above MSL.

The soils at the facility are the level, acidic, sandy soils of the Eastern Shore Coastal Plains. Groundwater in the immediate vicinity consists of an unconfined water table aquifer (Columbia) and one major confined aquifer (Yorktown).

The Main Base has both natural drainage patterns and storm water drains to intercept and divert flow. The natural drainage pattern on the northern portion of the Main Base drains to Little Mosquito Creek, which flows to the Atlantic Ocean. The eastern and southeastern portions of the Main Base have a natural drainage pattern that flows to Simoneaston Bay, then into Cockle Creek, Shelly Bay, and Chincoteague Bay, which drains to the Atlantic Ocean. The natural drainage pattern on the western and southwestern portions of the Main Base is toward Wattsville Branch, then to Little Mosquito Creek, and on to the Atlantic Ocean. Storm water drains, located throughout the developed portion of the Main Base, intercept natural drainage patterns and divert the flow to numerous discharge locations or outfalls. The majority of the outfalls discharge into the surrounding waterways and eventually to the Atlantic Ocean. Map 3, of Appendix I, show the locations of the storm water drains and the outfalls.

On the Mainland, the eastern sloping grade forms a natural drainage pattern that flows to Hog Creek and then to Oyster Bay, Assawoman Creek, and the Atlantic Ocean. Surface water on Wallops Island flows west through numerous tidal tributaries then subsequently flows to the Atlantic Ocean. A section of the Intracoastal Waterway is located west of Wallops Island and east of the Main Base and Mainland. Wallops Island also has storm drains that divert sheet flow to three individual outfalls.

3.4 AVERAGE WEATHER

The annual average high daily temperature is 65°F (18°C) and the average annual daily low is 48°F (9°C). The extreme low daily temperature is -4°F (-20°C), the extreme high

daily temperature is 101°F (38°C). The average annual rainfall is 39 inches (99 centimeters). The highest recorded wind speed is 78 mph (125 kph); however, the average prevailing wind speed is 20 mph (32 kph). The facility is in Seismic Zone 1 (minor seismic probability) and is susceptible to severe thunderstorms.

3.5 UTILITIES

Six miles (9.5 kilometers) of state maintained road connect the Main Base and Mainland. The facility owns a paved road, bridge, and causeway, which connect the Mainland and Wallops Island. These structures provide the only land link to Wallops Island and are a critical part of the NASA infrastructure. Hard surface roads, maintained by facility personnel, connect the structures located within the Main Base, Wallops Island, and the Mainland.

The Wattsville Substation of Conectiv Power Delivery (Conectiv) supplies electrical power to the facility. Separate lines connect to the Main Base and the Mainland/ Wallops Island area. During high demand (low voltage) periods, the facility supplements electricity with generators as part of a local peak load reduction program. The Facilities Management Branch (FMB) operates backup power generators when either Conectiv's service is not sufficient or short-term power services throughout the facility are needed for special projects. In addition, the National Oceanic and Atmospheric Administration (NOAA), a Wallops Flight Facility partner, has an auxiliary power source in the event of an outage, and also participates in the local peak load reduction program.

All potable water on the facility is obtained from groundwater production wells with depths of 150 feet (61 meters) to 250 feet (80 meters). Groundwater withdrawal, usage, and quality are regulated by the DEQ and by the Commonwealth of Virginia Department of Health. The water is used for domestic purposes and in municipal activities including laboratories, projects, and fire protection. In addition to NASA, the Town of Chincoteague, Virginia, maintains potable water wells located on the facility property, which range in depth from 100 feet (32 meters) to 262 feet (84 meters).

The Main Base wells are interconnected in a water supply piping system that, after chlorination, feeds the 500,000 gallon (1.9 million liter) ground-level storage reservoir (D-45). Water from this reservoir is pumped into the distribution system. A 150,000 gallon (520,000 liter) elevated storage tank rides the system, maintaining pressure and supplying short term demand. The chlorination facility has a capacity of approximately 1 million gallons per day (gpd) or 3,785,000 liters per day (lpd).

Potable water for the Mainland and Wallops Island is supplied from two wells with a combined potential capacity of 100,000 gpd (350,000 lpd). Two 150,000 gallon (520,000 liter) elevated storage tanks (X-45 and W-55) and a 100,000 gallon (350,000 liter) elevated storage tank (V-90) are on Wallops Island. An 80,000 gallon (300,000-liter) ground-level reservoir (U-49) on the Mainland is a fully operational

storage facility. The chlorination facility, located on the mainland (U-50), has a capacity of approximately 175,000 gpd (660,000 lpd).

The Main Base is served by a system of gravity sewers, pumping stations, and force mains connected to a Federally Owned Treatment Works (FOTW). The FOTW has a treatment capacity of 300,000 gpd (1,135,624 lpd). The Wallops Visitor Center is served by a separate dedicated septic system. Sewage on the Mainland discharges to septic tanks. Sewage at Wallops Island is collected by gravity sewers, pumping stations and force mains with the exception of five sites on the north end that make use of septic systems. Sewage is then transported by a force main to the Main Base, (refer to Maps 4 and 5 in Appendix I for schematics of the sanitary sewer system).

3.6 PETROLEUM STORAGE AND POTENTIAL SPILLS

Wallops Flight Facility owns and operates 49 AST's and 21 UST's of various sizes located throughout the facility. This capacity represents:

- 250,000 gallons (870,000 liters) of #6 fuel oil (aboveground)
- 144,000 gallons (545,000 liters) of JP-5 and JPTS, jet fuel, combined (underground and mobile)
- 119,180 gallons (451,150 liters) of #2 fuel oil (aboveground and underground)
- 16,080 gallons (60,870 liters) of waste oil (underground)
- 14,050 gallons (53,185 liters) of diesel fuel (aboveground, underground, and mobile)
- 10,300 gallons (35,700 liters) of gasoline (underground and mobile)
- 10,000 gallons (34,600 liters) of off specification fuel (underground)
- 275 gallons (950 liters) of kerosene (aboveground).

The total oil storage capacity at the facility, including partners, is summarized in Table 1. The maximum storage capacity of AST's is 338,210 gallons (1,280,264 liters) of fuel. The maximum storage capacity of UST's is approximately 196,195 gallons (742,680 liters) of fuel. UST's primarily store motor vehicle fuel, aircraft fuel, and heating fuel for buildings.

D-102 and D-103 on the Main Base store #6 fuel oil for heating and are operated together as a system. They have a combined storage capacity of 250,000 gallons (946,350 liters). Two 20,000 gallon (69,200 liters) AST's (D-9A and D-9B) are used to store #2 fuel oil for Building D-8, the Central Heating Plant on the Main Base. Tables 2A through 2D provide a complete inventory of the facility's oil storage systems. Maps 6 and 7 of Appendix I depict the locations of the oil storage tanks. In addition to the oil storage systems maintained at the facility, outside construction contractors occasionally bring portable aboveground storage tanks, of varying capacities, onto the facility for the duration of their contract. Prior to commencing work, these contractors are required to submit, for approval, an accident prevention plan to the Wallops Environmental Office. Contractors bringing an AST with a capacity greater than 1,100 gallons (4,165 liters) must include in the accident prevention plan proof that the tank is registered with the DEQ. Possible releases from these tanks must be addressed in the